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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,196	07/14/2006	Kunitaka Momota	101523.0001US1	7582
24392 7590 02/23/2010 FISH & ASSOCIATES, PC ROBERT D. FISH 2603 Main Street Suite 1000 Irvine, CA 92614-6232				
EXAMINER NGUYEN, NGOC YEN M				
ART UNIT 1793		PAPER NUMBER		
NOTIFICATION DATE 02/23/2010		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/597,196

Applicant(s)

MOMOTA ET AL

Examiner

Ngoc-Yen M. Nguyen

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,6,7,9,12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,6,7,9,12 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3, 6-7, 9, 12-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants are requested to point out support in the instant specification, by page and line numbers (*not* paragraph numbers in P.G. Publication), for the following limitations:

- In claim 1, "the reaction system being maintained at pH 2 or lower". It is noted that in the Examples, the pH of the mother liquid obtained after removing the calcium fluoride product has a pH of "1.2" (Example 1), "1.5" (Example 2), "not greater than 1" (Example 3), etc., but not maintaining the reaction system at pH 2 or lower.

- In claim 1, "the step of introducing is performed at room temperature or at a temperature between 30 to 90°C". It is noted that in the original claim 4, the "reaction is conducted at room temperature or from 30 to 90°C", however, the "introducing" step as now required appears to be different than the reaction in original claim 4, i.e. only the

temperature of the reactants being introduced is required to be within the claimed range, not the temperature of the hydrochloric acid in the reaction system.

- In claim 7, "an at least 2.2% hydrofluoric acid-containing effluent". It is noted that in Example 8, 2.2% HF is disclosed and other examples disclose higher % of HF (such as 17.2% HF in Example 3), however the claimed range of "at least 2.2%" would include values higher than both "2.2%" in Example 8 and "17.2%" in Example 3, such as 19%, thus, there is no sufficient support in the instant specification for the claimed range "at least 2.2%".

- In claim 7, "the step of introducing is performed at room temperature or at a temperature between 30 to 90°C" (note the reasons as stated for claim 1).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6, 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 6 and 12, it is unclear what is used to react with "all of hydrochloric acid" to form calcium chloride.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 7, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-130,427, optionally further in view of JP 51-110,498.

JP '427 discloses a process for producing high purity calcium fluoride from a mixed acid aqueous solution obtained in the decomposition of a fluorine compounds such as fluorocarbon. The mixed acid is distilled to remove metal impurities (note abstract).

JP '427 discloses that the mixed acid contains both HF and HCl (note paragraph [001]). After the distillation step, the mixed acid solution B still contains both HF and HCl (note paragraph [0020]). Calcium chloride is added to the mixed acid solution B to precipitate calcium fluoride (note paragraph [0021]).

The HF in JP '427 is considered as the "fluoride-containing effluent" as required in the instant claim 1. In JP '427, the fluoride-containing effluent (i.e. HF) is in combination with the HCl before adding the calcium chloride to form the calcium fluoride product, while the instant claim 1 requires that the fluoride-containing effluent and calcium chloride are separately added to the HCl in the reaction system. Since the calcium fluoride product cannot be formed until all three reactants, i.e. fluoride-containing effluent, HCl and calcium fluoride, are mixed, the difference between JP '427 and the instant claim 1 is the order of adding the reactants. Ex parte Rubin , 128 USPQ 440 (Bd. App. 1959) (Prior art reference disclosing a process of making a laminated

sheet wherein a base sheet is first coated with a metallic film and thereafter impregnated with a thermosetting material was held to render prima facie obvious claims directed to a process of making a laminated sheet by reversing the order of the prior art process steps.). See also *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) (selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results); *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is prima facie obvious.)

Since the mixed acid solution contains HCl and HCl is additionally formed (from the reaction between the calcium chloride with HF to form calcium fluoride and HCl, note equation in paragraph [0022]), the process as disclosed in JP '427 is considered to be "under an acidic condition with hydrochloric acid of pH 2 or lower" as required in the instant claims 1 and 7.

In the event that the pH in the process of JP '427 is not "2 or lower", JP '498 is applied to teach a process for recover fluorine values from waste liquor by adding a calcium compound at a pH of 2-3 (note claim 1). This range overlaps the claimed range at 2. With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held prima facie case of obviousness to select a value in a known range by optimization for the results. *In re Boesch*, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have

selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549. There is no evidence on record to show that the pH of the "fluoride-containing effluent" is critical for the claimed process.

Since the process of JP '427 has all the positive process steps as required in the claimed process, it would produce calcium fluoride particles having "a purity of 98% or higher".

The difference is JP '427 does not specifically disclose the reaction temperature and the particle size of the calcium fluoride product.

For the reaction temperature, JP '427 does not disclose heating or cooling for the step of forming calcium fluoride by reacting the HF, HCl and the calcium fluoride, it is assumed that the reaction is carried out at room temperature.

In any event, for the reaction temperature and the particle size of the calcium fluoride product, it would have been obvious to one of ordinary skill in the art to optimize the temperature for the process to obtain the best results and it is known in the art to produce a precipitated product with large particle size so it can be easily separated from the remained solution.

Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '427, optionally further in view of JP '140 as applied to claims 1, 3, 7, 9 above, and further in view of Johansing, Jr. (5,705,140).

The difference not yet discussed is JP '427 does not disclose the steps of producing calcium chloride from the HCl and recycling the calcium chloride to process of producing calcium fluoride.

Johansing '140 discloses a process for transformation of halogenated refrigerant gases (note title). The refrigerant gases react with oxygen and steam to form carbon dioxide and HF (note column 4, lines 11-33). Calcium chloride reacts with HF to form calcium fluoride and HCl (note reaction (d)). The HCl formed in reaction (d) is neutralized by the addition of purified calcium carbonate to form calcium chloride (note reaction (f)). HCl can also react with calcium hydroxide to form calcium chloride (note reaction (h)). The produced calcium chloride can be used in the formation of high purity calcium fluoride according to reaction (d) (note column 5, line 66 to column 6, line 3 and column 6, lines 15-18

It would have been obvious to one of ordinary skill in the art at the time the invention was made to react the HCl, by-produced by the reaction between calcium chloride and HF to form calcium fluoride, in the process of JP '427 with calcium carbonate or calcium hydroxide to form calcium chloride which can be recycled back to the process producing calcium fluoride, as suggested by Johansing '140 because by doing so the cost of fresh calcium chloride can be minimized and the need to dispose toxic HCl can be avoided.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '427, optionally further in view of JP '498 as applied to claims 1, 3, 7, 9 above, and further in view of Ohmi et al (5,362,461).

The difference not yet discussed is JP '427 does not disclose that the calcium fluoride can be used to produce HF.

Ohmi '461 discloses that it is well known in the art to produce HF by reacting calcium fluoride with sulfuric acid (note chemical reaction 1 in column 3).

It would have been obvious to one of ordinary skill in the art to use the calcium fluoride produced by the process of JP '427 as the reactant to produce HF as suggested by Ohmi '461 because using a product of one process as the reactant for the process is well the skill of the artisan.

Applicant's arguments filed December 2, 2009 have been fully considered but they are not persuasive.

Applicants argue that not all the claims elements in the '427 reference are present, and the combination of the '427 reference with Johansing and optionally the '498 reference fail to remedy the defects.

Since Applicants have not specifically pointed out the deficiencies of JP '427 reference, the rejections are maintained for the reasons as stated above.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner can normally be reached on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngoc-Yen M. Nguyen/
Primary Examiner, Art Unit 1793

nmn
February 21, 2010